Physics Flash
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INSIDE

Los Alamos NATIONAL LABORATORY EST. 1943

Career destination: Los Alamos

Discovering fulfillment and opportunities as Physics Division researchers

Meet Physics Division's newest staff researchers: Jennifer Schei (Applied Modern Physics, P-21); John Goett and Patrick Younk (Neutron Science and Technology, P-23); and Matthew Durham and Elena Guardincerri (Subatomic Physics, P-25).

After experiencing Los Alamos National Laboratory as postdoctoral researchers, they chose to continue their careers here for a host of compelling reasons, including the opportunity to

- pursue a mixture of basic and applied science,
- expand on their fulfilling postdoctoral research experiences,
- design and perform experiments using the Laboratory's exceptional scientific tools and facilities,
- collaborate in the impressive research being performed by their colleagues,
- participate in multi-institution scientific and technical projects led by the Laboratory, and
- live and work in an outdoors-centric, family-friendly community.

Becoming a Los Alamos staff scientist is no small accomplishment in the competitive world of national laboratory research. Postdoctoral researchers must demonstrate exceptional scientific abilities based on work performed, research published and presented, and interactions with colleagues. Division management selects the most promising candidates while considering diversity and the programmatic and strategic needs of its groups, the division, and the Laboratory. Read on to get acquainted with the newest Physics Division staff members.

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Jennifer Schei

Applied Modern Physics, P-21

Foray into physics

I grew up in Anoka, Minnesota, and really enjoyed courses in math and science, but I didn't have much exposure to careers in those fields. When I went off to college, I initially thought of majoring in elementary education, because I didn't know what types of careers I could pursue with a science degree other than teaching. My dad, who knew me better than I knew myself at that point, encouraged me to major in physics. I took the risk and changed my major from elementary education to physics the first week of my first year, having never taken a course in physics. I haven't looked back. I earned a BA in physics from the College of St. Benedict and St. John's University in Minnesota. Afterwards, I earned an MS and PhD in physics from Washington State University. My graduate work under Dr. David Rector, a former Los Alamos staff member, and Dr. Matthew McCluskey involved developing optical methods to image the brain, which we used to study the function of sleep.

Nature and neural activity

I came to Los Alamos National Laboratory as a postdoc to work on a Laboratory Directed Research and Development (LDRD) project developing three-dimensional nanowire electrode arrays to measure neural activity. I found the project cutting edge, and I was impressed with the collaboration opportunities with people in different areas of expertise. During my interview visit I was also impressed with the collaborative opportunities that Los Alamos offers. Of course, the beauty of the area was a benefit as I enjoy the outdoors.

My most memorable time as a postdoc was participating in the Science of Signatures Advanced Studies Scholars program hosted by the Engineering Institute at Los Alamos. A small group of us with different backgrounds were given a project completely out of our fields of expertise and three weeks to come up with a solution. This experience was really fun and exciting—to submerge ourselves into a new field and come up with some out-of-the-box ideas. For me, this program highlighted the strengths of Los Alamos where cross-disciplinary collaboration is common and encouraged. I found that I enjoyed and thrived in this type of environment and wanted to stay at the Lab.

Radiographic physics

My science career started with space physics, migrated to biophysics, and is currently in coding and radiographic physics. Each of these experiences was a serendipitous happening that led to the next great opportunity.

As a new hire, I am developing software for the Bayesian inference engine, which is used to analyze radiographic images of implosions of mockup nuclear weapons taken at the Dual-Axis Radiographic Hydrodynamic Test Facility. I also do some work on radiographic image analysis, which increases our image reconstruction capabilities.

Best career advice

Never underestimate the power of networking. As an introvert, it can be exhausting to meet new people, especially in large groups. I have to put on my confidence and force myself to initiate a conversation with someone new. Many of my great opportunities have been a result of networking. You never know where the road will lead next and what you can learn from someone else.

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Career destination cont.

John Goett

Neutron Science and Technology, P-23

P-squared
I studied philosophy and physics at Rensselaer Polytechnic Institute in Upstate New York. My dissertation work was on precision anti-neutrino flux measurements at nuclear reactors.

Neutrino mysteries
I sought out a postdoctoral position at Los Alamos because I wanted to work with the Weak Interactions Team on the neutrinoless double beta decay search we call the MAJORANA Demonstrator project. Neutrinoless double beta decay is a theoretical process that has not been observed, but is intriguing to particle physicists because it offers simple explanations to questions about neutrino mass and the observed matter/anti-matter asymmetry in the universe. The demonstrator is an R&D program to field technologies we could use in the ultimate search.

SURF rider
My most memorable day as a postdoc was the first day I went underground at our laboratory in Lead, South Dakota. I've spent the better part of the last decade working deep underground, but SURF [for Sanford Underground Research Facility] is special. It's a relatively new facility, and everything there, from the science being done to the folks who keep the place going, is pretty unique.

Collaborative science
As a staff member, I like working with folks who come from different disciplines. You can discover quite a lot by attacking a technical problem with someone who doesn't think like you. For example, right now I'm working on a bolometer design that uses phonon time-of-flight and caustics to do particle identification. If I hadn't started talking to materials scientists who think about heat transfer in a more detailed way than I used to, I never would have explored this idea.

Universal impact
My passion is for precision instrumentation and sensor development. I'm soaking up as much expertise as I can on imaging technologies for developing next generation cameras relevant to the Lab's missions. I'm also trying to develop a new detector technology that, if successful, could do good things for basic research in neutrino and dark matter science as well as nuclear nonproliferation.

Best advice
Frans Trouw (Subatomic Physics, P-25) had done a lot to help me get an ambitious research project off the ground. Probably the most important thing he is teaching me is the difference between efficiency and effectiveness. People can get taken away with the simplicity and beauty of a completed structure, and put a lot of energy into gutting the structure of all its scaffolding and making it look just so. It doesn't matter if it's a piece of apparatus or an idea. At the end of the day, it's the function of the thing that matters. Did you get the measurement, or did you fuss with some cool widget?

Patrick Younk

Neutron Science and Technology, P-23

The U.P.
I was born and raised in Norway, Michigan, a small town in the Upper Peninsula (a.k.a., the Great White North, eh?!). I spent eight years working as an engineer in industry before going back to school to get a PhD in physics from Michigan Technological University.

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Career destination cont.

Soaring with HAWC
I was interested in conducting research associated with the High-Altitude Water Cherenkov (HAWC) gamma-ray observatory, a new instrument that was to be built on a mountain in Mexico. Los Alamos was a leading institute in the HAWC collaboration, and I had a lot of respect for my prospective boss, Brenda Dingus. I was offered a Director's Postdoctoral Fellowship; it was a great opportunity for me.

One memorable day was April 15, 2012. We started construction on the detector array for HAWC, and my job was to provide the initial instruction to a team of eight Mexican farmers on how to build a world-class astrophysics observatory in the thin air at 13,500 feet above sea level—and I don't speak Spanish. Suffice it to say, I had a great team of workers, and the observatory was built to specification and on time.

Brenda Dingus was my first mentor at the Lab. Another person I would like to mention is David Holtkamp, a consummate experimentalist who got me interested in work associated with stockpile stewardship, and I cannot thank him enough for the opportunities he has thrown my way.

Stockpile stewardship
As a researcher, I have always liked being involved in different projects from basic to applied research. The Lab is a great place if you have broad interests in science and technology. Also, the Lab lets you quickly take on leadership roles in programmatic projects.

As a staff scientist, my current project is fielding optical velocimetry diagnostics on a series of subcritical experiments at the Nevada National Security Site, to support the Lab's stockpile stewardship charge. I often work in a mine, which is interesting because before I was working on a mountain. I am particularly excited about applying ultrafast optical ranging technology to several diagnostic challenges associated with stockpile stewardship, with applicability to the general scientific instrumentation community.

Matthew Durham

Subatomic Physics, P-25

From hill country to Long Island
I was born in Austin and went to the University of Texas, where I received a BS in physics in 2005. After that, I went to Stony Brook University in New York and worked at Brookhaven Lab for my PhD in physics.

Detecting an opportunity
While working on my thesis experiment I got to know several staff members and postdocs that were part of P-25. I was very impressed with their work and the leadership role that the Los Alamos group played in our experiment. This led me to look for a postdoc in the group, and it worked out. My main task as a postdoc here was work on a new silicon detector for PHENIX (Pioneering High Energy Nuclear Interaction eXperiment) at the Relativistic Heavy Ion Collider. It is an extremely complex device with more than a million readout channels that P-25 has worked on for a decade. The first time we installed the entire detector and took data was a big deal for me.

Early career support
When I was first hired as a postdoc, my team leader was Melynda Brooks, who was in charge of the detector upgrade at PHENIX. I was constantly impressed with both her technical leadership and ability to manage a group of people from various institutions to make such a large, complicated project a success. The entire P-25 PHENIX team was very supportive of me and gave me the freedom to work on what I found interesting, along with all the tools that I needed to succeed.

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Career destination cont.

Staying power
At Los Alamos, I am able to work on basic physics research as well as help solve problems in the national interest. The mix of basic and applied science that we are able to do here is hard to find in other places. Plus, Los Alamos is a great place to live and raise my two daughters.

Harnessing cosmic rays to solve tough challenges
I spend most of my time now on muon tomography, where we use natural radiation from cosmic rays to image the interior of dense objects. We are applying this technique to several problems in arms control and treaty verification, and we're using it to aid the cleanup of the Fukushima Daiichi nuclear power plant in Japan.

Elena Guardincerri

Subatomic Physics, P-25

Ciao a tutti
I am from Chiavari, Italy. I received my PhD in physics from the University of Genova, Italy. My expertise is data acquisition, simulation, and analysis in particle physics.

Variety is the spice of life
I sought to be a postdoc at Los Alamos because I liked the idea of working in a multidisciplinary laboratory where scientists have the chance to work in different fields, on different subjects, with colleagues from different scientific disciplines. My most memorable day as a postdoc was actually a week-long experience. Last summer, I did fieldwork in La Jolla, California: we moved our muon tracker there to collect data at sea level and calibrate our analysis algorithms in view of the analysis of the muon radiography data that will be taken around the Fukushima reactor unit #2 in Japan. I enjoyed the place, the fieldwork, and the colleagues I shared the experience with.

A place to call home
I wanted to join LANL as a staff scientist because I enjoy what I do every day, and I like and esteem all my colleagues. Besides, my husband also has a good job in the area as a software engineer.

Far-reaching impact from Italy to Japan
In our group, staff members are given the opportunity to do research they like. I am deeply thankful to get to work on the imaging of the dome of the Florence Cathedral in Italy, with the purpose of finding hidden reinforcement structures and informing the structural models of the building aimed at its reinforcement.

For that project and others, I apply muon radiography, which uses secondary particles generated when cosmic rays collide with upper regions of Earth's atmosphere to create images of the objects that the particles, called muons, penetrate. The process is similar to an x-ray image, except muons are produced naturally and do not damage the materials they contact.

I'm also using muon radiography for
- detecting fissile material, which has important applications for homeland security
- imaging and monitoring spent nuclear fuel casks, which is again crucial since such fuel could be stolen and used to produce weapons
- imaging damaged reactors at the Fukushima Daiichi power plant in Japan, with the purpose of locating the molten core and plan its removal.

Outstanding mentors
Many colleagues have had a positive impact on me, but Christopher Morris and Gerry Garvey strike me in particular for their great expertise and knowledge of physics, their willingness to take up challenges, and their deep humanity.

David Meyerhofer named new Physics Division Leader

Photo courtesy of University of Rochester

In late August, David Meyerhofer will join the Laboratory as its new Physics Division Leader.

A professor at the University of Rochester and deputy director of the university's Laboratory of Laser Energetics (LLE), a national resource for investigating the interaction of intense radiation with matter, Meyerhofer has an extensive R&D, managerial, and operational background as well as insight into the NNSA inertial confinement fusion and weapons programs.

He has well-established credentials in the physics research community, having served on the National Research Council's Committee on High Energy Density Plasma Physics, playing an active role in the American Physical Society's Division of Plasma Physics, and contributing in an editorial role to *Reviews of Modern Physics* and *Physical Review Letter*s, among others. He also has been a leader in developing and nurturing national interest in high energy density physics.

He has been a member of the Predictive Science Panel since 2011 and became chair in 2014. The Predictive Science Panel provides peer review of both Livermore and Los Alamos national laboratories predictive weapons physics activities such as those found in the Advanced Simulation and Computing and the Science and Inertial Confinement Fusion campaigns. In his role at the Laboratory of Laser Energetics, which also includes directing the long-term R&D planning and enhancing experimental capabilities to support R&D execution, he regularly updates both NNSA and DOE's Office of Science on research activities and plans. He also has directly supported NNSA's strategic planning activities. He has a demonstrated ability to develop synergies between weapons and basic science, and to promote research activities that deliver on mission while enabling scientific creativity. LLE undertakes many experiments in support of stockpile stewardship and Meyerhofer is responsible for making sure that LLE delivers.

Doug Fulton, who served as the 14th Physics Division Leader beginning in 2008, retired at the end of last month.

Scientists Hye Young Lee and John O'Donnell (LANSCE Weapons Physics, P-27) check the Chi-Nu instrument at the Weapons Neutron Research Facility.

Recent LANSCE run cycle one of most prolific for NNSA research

Using neutrons to unveil plutonium secrets at LANSCE

Enabled by the broad neutron energy spectrum available at the Los Alamos Neutron Science Center (LANSCE), eight different studies were performed during the last run cycle, revealing plutonium's materials and nuclear properties—from surface studies on 50-mg plutonium thin films to prompt neutron spectra for fission of ^{239}Pu.

Neutron production targets at LANSCE's Weapons Neutron Research Facility (WNR) and Lujan Center provide complementary neutron energies spanning 1 meV–600 MeV, enabling advances in fundamental and applied materials research and stockpile stewardship science. The science-based Stockpile Stewardship Program combines advanced scientific and experimental capabilities with high-performance supercomputing to help scientists and engineers understand and resolve issues in the nation's nuclear deterrent.

Materials milestones

A broad range of program development activities aligned Lujan Center materials' user program with the NNSA mission, making the last run cycle one of the most prolific for plutonium research, with great impact to NNSA programs.

For example, the first neutron reflectometry characterization of the properties of less than 50-mg PuO_2 thin films was performed using the surface neutron reflectometer Asterix. Such preliminary work is critical to characterizing interfaces and understanding the effect of the existence or development of nonhomogeneous phases at different surface depths of real parts that might inhibit or enhance processes and degradation like hydride formation or oxidation. Feasibility studies of highly neutron absorbing materials (Dy, Er) were performed using the small angle neutron scatter-

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The LQD, a small angle neutron scattering instrument at the Lujan Center, is designed to study large-scale structures with dimensions from 10 to 1000 Å.

Run cycle cont.

ing instrument LQD and Asterix. LQD allowed scientists to characterize mesoscale defects in these materials created by aging or damage. The first experiments on plutonium samples at LQD and Asterix proved it feasible to characterize the effects of aging and annealing in the mesoscale in the upcoming run cycle.

Diffraction and inelastic neutron scattering were used to characterize the local structure and phonon density of states of PuGa alloys using highly neutron absorbing ^{239}Pu as a function of temperature on the neutron powder diffractometer (NPDF) and filter difference spectrometer (FDS). Scientists characterized the microscopic origin of the stabilization mechanisms, the local effects of radiation damage or stress, and possibly the mechanism behind the phase transitions that remain elusive from the average structure studies and are impossible to obtain using x-rays. Using the filter difference spectrometer, the phonon density of states (pDOS) was measured on PuGa compounds, extending the data range over which the pDOS has been observed in such compounds. Such information informs first-principle calculations leading to vibrational models and theoretically obtained equations of state needed to simulate dynamic experiments.

Overall, such efforts demonstrated the feasibility of using available ^{239}Pu, which is highly neutron absorbing, rather than the lower absorbing and rare ^{242}Pu, to perform neutron scattering experiments. These combined sophisticated modeling efforts and data reduction methods allow Lujan Center to effectively and efficiently respond to future NNSA needs.

Nuclear science milestones

A number of nuclear science milestones were recently achieved using the high-energy neutrons at WNR.

The Chi-Nu detector array, developed by LANL and Lawrence Livermore National Laboratory nuclear physicists with the goal of measuring the prompt fission neutron spectra of ^{239}Pu, greatly benefitted from the development of a new integrated data acquisition system and, thanks to the LANSCE risk mitigation project, an increase of a factor of 2.5 in the beam rate. Important NNSA milestones were achieved on the prompt fission neutron spectra of ^{235}U, with preliminary ^{239}Pu results obtained during the run cycle.

The fission Time Projection Chamber, an NNSA instrument developed in collaboration with Lawrence Livermore with the goal of achieving 1% accuracy in determining ^{239}Pu cross sections, delivered measurements leading towards the achievement of a Level 2 milestone. Successful preliminary results provided ^{239}Pu/^{235}U cross-section ratios.

The SPectrometer for Ion DEtermination in fission Research (SPIDER) and the total kinetic energy (TKE) release in fission were fielded in both the Lujan Center and WNR, obtaining data enabled by the facilities' complementary neutron sources and broad energy range. During the recent run cycle, experiments determined the total kinetic energy dependence on incident neutron energy for fission of ^{239}Pu and the fission product yields of ^{239}Pu using the 2E-2v method.

NNSA funded the 2015 run cycle, which supports the Lab's Stockpile Stewardship mission area and Nuclear and Particle Futures science pillar.

Technical contact: Gus Sinnis

Plasma Physics research among DOE projects to create new technology pathways for low-cost fusion energy development

The Energy Department's Advanced Research Projects Agency-Energy (ARPA-E) recently announced $30 million in funding for nine groundbreaking new projects aimed at developing prototype technologies to explore new pathways for fusion power. Three of the projects involve Los Alamos National Laboratory science staff and partners, including the Spherically Imploding Plasma Liners as a Standoff Magneto-Inertial-Fusion Driver led by researchers in Plasma Physics (P-24).

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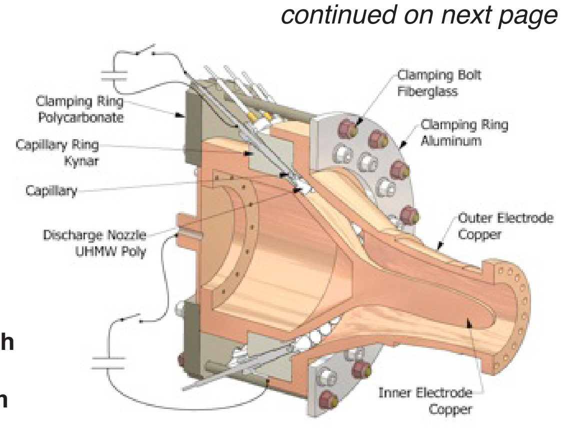
Illustration of the innovative shaped coaxial guns, designed and built by HyperV Technologies Corp., which will be further developed with a gaseous injection system to form and launch plasma jets.



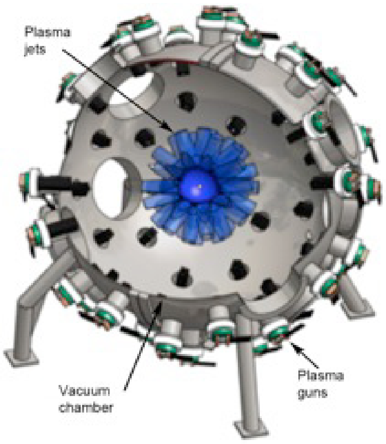


Illustration of 60 plasma jets merging and forming a spherically imploding plasma liner in the 9-foot-diameter vacuum chamber of P-24's Plasma Liner Experiment.

Develop cont.

The projects are funded through ARPA-E's Accelerating Low-cost Plasma Heating and Assembly (ALPHA) program, which seeks to develop low-cost fusion energy technology solutions.

"These new projects emphasize ARPA-E's commitment to developing a wide range of technology options to ensure a more affordable and sustainable energy future," said ARPA-E Director Dr. Ellen D. Williams. "Investing in … intermediate density fusion illustrates ARPA-E's role in accelerating energy research and development."

For the Spherically Imploding Plasma Liners as a Standoff Magneto-Inertial-Fusion Driver project, which received \$5.875M, Los Alamos National Laboratory, teamed with Hyper V Technologies and a multi-institutional team, will develop a plasma-liner driver formed by merging supersonic plasma jets produced by an array of coaxial plasma guns. The key virtues of a plasma-liner driver, as noted by project leader Scott Hsu (P-24), are that it (1) has standoff, i.e., it completely avoids hardware destruction because the plasma guns are placed sufficiently far away (many meters in an eventual fusion reactor) from the region of fusion burn, and (2) it enables high implosion velocity (50–100 km/s) to overcome thermal transport rates inherent in desired targets.

This nondestructive approach may enable rapid, low cost research and development and, by avoiding replacement of solid components on every shot, may help lead to an economically attractive power reactor. This project will seek to demonstrate, for the first time, the formation of a small scale spherically imploding plasma liner in order to obtain critical data on plasma liner uniformity and ram pressure scaling. If successful, this concept will provide a versatile, high-implosion-velocity driver for intermediate fuel density magneto-inertial fusion that is potentially compatible with several plasma targets. These experiments will be conducted on the existing Plasma Liner Experiment (PLX) facility at Los Alamos. The project supports the Laboratory's Energy Security mission and Nuclear and Particle Futures science pillar. Its success could stimulate interest from other government agencies and private investors in supporting lower-cost fusion-energy development.

Other Los Alamos ALPHA projects are the Stabilized Liner Compressor for Low-Cost Fusion and Prototype Tools to Establish the Viability of the Adiabatic Heating and Compression Mechanisms Required for Magnetized Target Fusion. To read more about the projects, please see the Laboratory's news story at www.lanl.gov/discover/news-stories-archive/2015/July/new-doe-projects-for-low-cost-fusion-energy-development.php.

Technical contact: Scott Hsu

Automatic alignment of multiple magnets into a Halbach cylinder

New technique replaces manual fabrication method

Applied Modern Physics (P-21) researchers have developed a new, simpler technique to assemble a Halbach cylinder, a device that since its invention in the 1980s has been fabricated by hand, requiring permanent magnet assembly skills. Used in nuclear magnetic resonance (NMR), magnetic resonance imaging (MRI), magnetic refrigeration, magnetic separation, motors/generators, and charged particle manipulations, it is a powerful permanent magnet circuit design creating a uniform magnetic field distribution inside while minimizing field outside the cylinder.

To automatically align multiple permanent magnets, the team, led by Pulak Nath (P-21), used magnetic field distribution from a diametrically magnetized cylindrical magnet where the direction of the magnetic field varies continuously along the circumference, mimicking the distribution in an "ideal" Halbach ring. Previously, multiple magnets were aligned in specific orientations in the presence of strong magnet–magnet interactions and against their natural alignment tendency.

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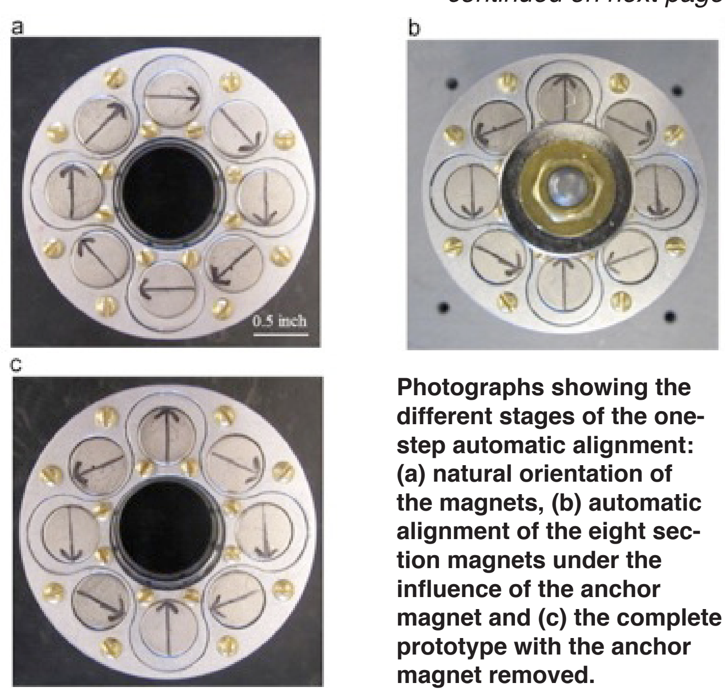

Photographs showing the different stages of the one-step automatic alignment: (a) natural orientation of the magnets, (b) automatic alignment of the eight section magnets under the influence of the anchor magnet and (c) the complete prototype with the anchor magnet removed.

Halbach cont.

An "ideal" Halbach cylinder is a ring magnet where polarization direction varies continuously along the circumference such that the magnetic flux increases inside, and reduces or cancels on the outside. However, in practice, it may not be possible to magnetize a hard magnetic ring in a manner where the polarization direction can be varied continuously. Therefore, typical Halbach cylinders have been built using discrete permanent magnets, each with its own magnetization direction, approximating the Halbach distribution.
In the new approach, the team built holders in which multiple cylindrical permanent magnets (identified as sections) can be inserted so that each magnet, located along the circumference of the intended Halbach ring, can rotate freely about its axis. The holder also contains a center slot to insert a diametrically magnetized cylindrical magnet, or "anchor." Before anchor insertion, the sections are aligned according to their natural interaction. However, when the anchor is inserted, all section magnets simultaneously and automatically rotate into positions forming a Halbach assembly. These magnets can then be secured using glue or set screws. The anchor is removed to obtain the final Halbach assembly.

Los Alamos's Laboratory Directed Research and Development program funded the work, which supports the Laboratory's National Security mission area and Science of Signatures science pillar by developing portable flow cytometry technology (project title: "Grayscale Flow Cytometry - Multicoil NMR Sensors for Portable Flow Cytometry"). Reference: "Automatic alignment of multiple magnets into Halbach cylinders," by C.K. Chandrana, J.A. Neal, D. Platts, B. Morgan, P. Nath (all P-21), *Journal of Magnetism and Magnetic Materials*, **381**, 1 (2015).

Technical contact: Pulak Nath

Kathy Prestridge expands APS diversity goals for women in physics

In her role as chair of the American Physical Society's (APS) Committee on the Status of Women in Physics (CSWP), Kathy Prestridge, (Neutron Science and Technology, P-23) recently briefed the Society's Council, including CEO Kate Kirby and President Samuel Aronson, on CSWP goals and activities, many of which have been expanded under her leadership. To focus the committee's activities and increase the impact on diversity in physics, the updated goals are to:

- Increase the fraction of women in physics by increasing the number who enroll in and complete undergraduate physics degrees.
- Understand and implement solutions for gender specific issues such as stereotype threat, unconscious bias, and impostor syndrome that affect the careers of all physicists.
- Enhance professional development opportunities for women in physics such as mentoring, mentor training, and negotiation skills workshops.
- Remedy issues that impact gender inequality in physics by encouraging research into fundamental causes, assessing policies, and advocating good practices.

Programs designed to advance these goals include: the Conferences for Undergraduate Women in Physics, Professional Skills Development Workshops, and Climate Site Visits to physics departments and collaborations. One of the most successful, the Professional Skills Development Workshops, will continue under a new five-year National Science Foundation grant. Principal investigators Theodore Hodapp (American Physical Society), Sherry Yennello (Texas A&M University), and Prestridge are developing Train the Trainer,

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Physics Division bids fond farewell to Doug Fulton

After 30 years at Los Alamos National Laboratory and serving as Physics Division Leader from 2008-2015, Doug Fulton retired at the end of July. His Physics Division coworkers and Laboratory colleagues gathered recently to wish him well at an after-work celebration at the Bathtub Row Brewing Co-op in Los Alamos.

Photos by Dianne Wilburn

Prestridge cont.

a new program addressing unconscious bias and teaching negotiation skills to graduate students, postdoctoral researchers, and early-career job seekers pursuing positions in academia, industry, or national labs. Nine established leaders in physics who are representative of diverse technical and geographical areas attended the April inaugural workshop in Baltimore, Maryland. These women will give workshops on negotiation and career skills at their home organizations. If your group would like to hold a workshop, please contact Prestridge at kpp@lanl.gov. Election to the CSWP occurs through nominations to the American Physical Society, with final approval made by the council and invitations extended by the CEO. Questions regarding the CSWP should be addressed to kpp@lanl.gov.

Technical contact: Kathy Prestridge

Participants in the first Train the Trainer workshop. Kathy Prestridge (Los Alamos National Laboratory, Chair CSWP, fluid dynamics), Donna Stokes (U. of Houston, solid state physics), Allena Opper (Jefferson Lab, NSF, nuclear physics), Pearl Sandick (U. of Utah, cosmology), Susan Blessing (Florida State U., high energy physics), Nancy Houfek (professional trainer), Kawtar Hafidi (Argonne National Lab, nuclear physics), Sherry Yennello (TAMU, nuclear physics), Josee Vedrine-Pauleus (U. Puerto Rico Humacao, condensed matter physics), and Karen Daniels (NCSU, soft matter physics).

Celebrating service

Congratulations to the following Physics Division employees celebrating service anniversaries recently:

Matthew Murray, P-25	40 years
Camilo Espinoza, P-25	35 years
Albert Hsu, P-24	30 years
Geoffrey Mills, P-25	25 years
Frank Merrill, P-23	20 years
Rosemary Romero, P-27	20 years
Victor Fanelli, P-27	10 years
Valerie Fatherley, P-24	10 years
Patricia Herrera, P-27	10 years
Robert King, P-23	10 years
Frank Lopez, P-24	10 years
Tamsen Schurman, P-25	10 years
Peter Aguino, P-27	5 years
Thomas Coleman, P-27	5 years
Dana Duke, P-27	5 years

HeadsUP!

When thunder roars ...

Remind yourself, your co-workers, and your children of the appropriate protocol when encountering lightning.

- No place outside is safe when thunderstorms are in the area; take cover immediately.
- If you hear thunder, lightning is close enough to strike. Immediately take shelter.
- Don't take shelter under a tree, on a cliff or rocky overhang, near a body of water, on an elevated area, or near an object that can conduct electricity (e.g., barbed wire or power line).
- Ideally, take shelter indoors or within a metal car.
- Once inside, stay away from corded phones, computers and other electrical equipment that put you in direct contact with electricity.
- Stay away from sinks, bathtubs, showers, toilets, concrete, windows and doors.
- Consider using the Spark smartphone app, a safety feature by WeatherBug that can serve as a lightning detector and safety status indicator. The app provides precise distance between your location and the closest lightning detected.

Keep in mind: "When thunder roars, go indoors!"

PhysicsFlash

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To submit news items or for more information, contact Karen Kippen, ADEPS Communications, at 505-606-1822, or kkippen@lanl.gov.

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